CLAIMS:

What is claimed is:

1. A substrate holder for supporting a substrate in a processing system and controlling the temperature thereof comprising:

a first heating element arranged in a first region of said substrate holder and configured to raise the temperature in said first region;

a second heating element configured to raise the temperature in said second region;

a first controllably insulating element positioned below said first heating element in said first region;

a second controllably insulating element positioned below said second heating element in said second region; and

at least one cooling element arranged below said first and second controllably insulating elements,

wherein said first controllably insulating element is configured to control the transfer of heat from said substrate through said first region of said substrate holder to said at least one cooling element, and said second controllably insulating element is configured to control the transfer of heat between said substrate through said second region of said substrate holder to said at least one cooling element.

2. The substrate holder as recited in claim 1 further comprising a first intermediate space arranged between said first region and said second region, and configured to permit the transfer of heat between said substrate and said at least one cooling element.

3. The substrate holder as recited in claim 1, wherein said second region is located concentrically around the first region which is centrally located, said substrate holder further comprising:

a third heating element concentrically arranged about said second heating element in a third region of said substrate holder and configured to raise the temperature in said third region; and

a third controllably insulating element positioned below said third heating element in said third region and concentrically arranged about said second controllably insulating element.

4. The substrate holder as recited in claim 1, wherein said first and second heating elements comprise at least one of a resistive heating element, a heating channel, and a thermo-electric element.

5. The substrate holder as recited in claim 1, wherein said at least one cooling element comprises at least one of a cooling channel, and a thermo-electric element.

6. The substrate holder as recited in claim 1, wherein each of said first and second controllably insulating elements comprise a gas gap coupled to at least one of a vacuum pump and a gas supply unit.

7. The substrate holder as recited in claim 1 further comprising at least one of an electrostatic clamp for clamping said substrate to said substrate holder, and a backside gas supply system for increasing the thermal conductance between said substrate and said substrate holder.

8. The substrate holder as recited in claim 1 further comprising at least one temperature sensing device.

9. The substrate holder as recited in claim 8, wherein said temperature sensing device comprises at least one of an optical thermometer, and a thermocouple.

10. The substrate holder as recited in claim 1 further comprising a controller coupled to at least one of said first heating element, said second heating element, said first controllably insulating element, said second controllably insulating element, and said at least one cooling element.

11. The substrate holder as recited in claim 1, wherein the first region is a central region and a second region is a peripheral region concentrically arranged about said first region.

12. The substrate holder as recited in claim 1, wherein the first and second regions are adjacent.

13. A method of controlling the temperature of a substrate using a substrate holder in a processing system comprising:

initializing one or more control parameters for controlling the temperature of said substrate using said substrate holder, said substrate holder comprising a first heating element arranged in a first region of said substrate holder, a second heating element arranged in a second region of said substrate holder, a first controllably insulating element positioned below said first heating element in said first region, a second controllably insulating element positioned below said second heating element in said second region, and at least one cooling element arranged below said first and second controllably insulating elements;

initiating a process in said processing system;

adjusting said one or more control parameters; and

terminating said process.

14. The method as recited in claim 13 further comprising a first intermediate space arranged between said first region and said second region, and configured to permit the transfer of heat between said substrate and said at least one cooling element.

15 The method as recited in claim 13, wherein said second region is located concentrically around the first region which is centrally located, further comprising:

a third heating element concentrically arranged about said second heating element in a third region of said substrate holder; and

a third controllably insulating element positioned below said third heating element in said third region and concentrically arranged about said second controllably insulating element.

16. The method as recited in claim 13, wherein said first and second heating elements comprise at least one of a resistive heating element, a heating channel, and a thermo-electric element.

17. The method as recited in claim 13, wherein said at least one cooling element comprises at least one of a cooling channel, and a thermo-electric element.

18. The method as recited in claim 13, wherein each of said first and second controllably insulating elements comprise a gas gap coupled to at least one of a vacuum pump and a gas supply unit.

19. The method as recited in claim 13 further comprising at least one temperature sensing device.

20. The method as recited in claim 19, wherein said temperature sensing device comprises at least one of an optical thermometer, and a thermocouple.

21. The method as recited in claim 13 further comprising a controller coupled to at least one of said first heating element, said second heating element, said first controllably insulating element, said second controllably insulating element, and said at least one cooling element.

22. The method as recited in claim 21, wherein said controller facilitates at least one of setting, monitoring, adjusting, and controlling said one or more control parameters.

23. The method as recited in claim 13, wherein said one or more control parameters comprise at least one of a resistive heating element

voltage, a resistive heating element current, a heating channel fluid flow rate, a heating channel fluid temperature, a thermo-electric element current, a thermo-electric element polarity, a gas gap gas type, a gas gap gas pressure, a cooling channel fluid flow rate, and a cooling channel fluid temperature.

24. The method as recited in claim 13 further comprising at least one of an electrostatic clamp for clamping said substrate to said substrate holder, and a backside gas supply system for increasing the thermal conductance between said substrate and said substrate holder.

25. The method as recited in claim 24, wherein said one or more control parameters comprise at least one of an electrostatic clamp voltage, a backside gas type, and a backside gas pressure.

26. The method as recited in claim 24, wherein said backside gas supply system is at least one of a two-zone backside gas supply system, and a three-zone backside gas supply system.

27. The method as recited in claim 13 further comprising:

initiating a pre-process in said processing system following said initializing said one or more control parameters.

28. The method as recited in claim 27 further comprising:

adjusting said one or more control parameters during said pre-process.

29. The method as recited in claim 27 further comprising:

adjusting said one or more control parameters following said pre-process, and preceding said process.

30. The method as recited in claim 13 further comprising:

initiating a post-process in said processing system following said terminating said process.

31. The method as recited in claim 30 further comprising:

adjusting said one or more control parameters during said post-process.

32. The method as recited in claim 30 further comprising:

adjusting said one or more control parameters preceding said post-process, and following said process.

33. The method as recited in claim 13, wherein the first region is a central region and a second region is a peripheral region concentrically arranged about said first region.

34. The method as recited in claim 13, wherein the first and second regions are adjacent.